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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/733,750
Filing Date: December 11, 2003
Appellant(s): FORMAN ET AL.

Dan C. Hu
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 5, 2007 appealing from the Office action mailed April 4, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,819,291	Haimowitz et al.	10-1998
2002/0069195	Commons et al.	6-2002
5,806,058	Mori et al.	9-1998
5,276,616	Kuga et al.	1-1994

6,070,164 Vagnozzi 5-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 4, 5, 7, 8, 15, 17-19, 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haimowitz et al. (US Patent 5,819,291) of record, hereinafter "Haimowitz", in view of Commons et al. (US Patent Pub 2002/0069195) of record, hereinafter "Commons".

In regards to **claim 1**, Haimowitz discloses a heuristics analysis tool embodied in a computer-readable storage medium, comprising:

a. a persistent table, having clean data records and key records wherein at least one key record is associated with each clean data record, each key record having at least one field of data from the associated clean data record (Col. 2, lines 63-66; col. 4, lines 65-67; col. 5, lines 1-8)[1]; and

b. heuristic-based routines to match newly received data records to the key records in the persistent table (Col. 3, lines 37-40).

Haimowitz does not expressly disclose iteratively cleaning the newly received data records by modifying the newly received data records in response to no match occurring between the received data records and the key records in the persistent table.

Commons discloses an iterative process for finding a matching database record (Commons: para. 0058, lines 1-3). Commons further discloses using a search key that is

[1] The candidate records (key record) are associated with the existing records (clean data records) in the database.

matched against records that are stored in the database (Commons: para. 0058, lines 4-6, 10-11). If a match is not found on the first try, the search is repeated (matching is repeated) with progressively less specific information (iteratively cleaned) (Commons: para. 0060, lines 1-3). This process is repeated until a match is found or it is determined that no matching records exist (Commons: Figs. 3A, 3B; para. 0060-63).

Haimowitz and Commons are analogous art because they are directed to the same field of endeavor of data storage and retrieval.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the tool of Haimowitz by adding the feature of iteratively cleaning the newly received data records by modifying the newly received data records in response to no match occurring between the received data records and the key records in the persistent table, as taught by Commons.

The motivation for doing so would have been because iteratively cleaning the input data and performing a matching process to retrieve data is fast and accurate process for retrieving data (Commons: para. 0058, lines 1-3). Furthermore, since the process is iterative, manual intervention following a failed matching step is no longer required and thus provides convenience and speed.

In regards to **claim 4**, Haimowitz discloses wherein each said clean data record is a completely clean data file (Haimowitz: Col. 3, lines 61-67; col. 4, lines 1-61).

In regards to **claim 5**, Haimowitz discloses the tool as set forth in claim 1 further comprising: at least one column recording one or more of said heuristic-based routines that were involved in generating each of said key records (Col. 5, lines 1-4, 50-67; col. 6, lines 6-10)[2].

In regards to **claims 7 and 8**, Haimowitz discloses special flags associated with said key records, said flags are a quality factor assigned to each said key record (col. 5, lines 31-34).

In regards to **claim 23**, Haimowitz discloses a method of doing business comprising:

a. storing a database of clean data files for each of a plurality of entities (Col. 2, lines 62-66);

b. creating a tabulation of crude keys, each having a pointer to an associated one of said clean data files (Col. 3, lines 34-47; col. 4, lines 65-67; col. 5, lines 1-8)[3];

c. receiving a dirty data record related to at least one entity of said plurality of entities (Col. 3, lines 32-33)[4];

d. comparing said dirty data record to said tabulation (Col. 3, lines 37-40; col. 6, lines 11-18)[5];

e. assigning said dirty data record to one of said clean data files if a match is found based on the comparing(Col. 6, lines 20-21)[6]; and

f. comparing the dirty data record to said tabulation (Col. 6, lines 11-22).

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[2] The hash key field is interpreted as heuristic based routines because they are functions used to generate candidates (key records).
[3] The candidate set is interpreted as a tabulation of crude keys. Each of the candidates is related to an existing entry in the database. This is interpreted as having a pointer to a clean data file.
[4] A new record is received is interpreted as receiving a dirty record related to at least one entity of said plurality of entities.
[5] Matching (comparing) between the new record (dirty data) and each of the candidates (tabulation) is performed.
[6] If a match is found the new record (dirty data) is used to update (assigned) the existing record (clean data file) associated with the matched candidate.

Haimowitz does not expressly disclose cleaning the dirty data record by modifying the dirty data record in response to determining that no match is present based on the comparing.

Commons discloses an iterative process for finding a matching database record (Commons: para. 0058, lines 1-3). Commons further discloses using a search key that is matched against records that are stored in the database (Commons: para. 0058, lines 4-6, 10-11). If a match is not found on the first try, the search is repeated (matching is repeated) with progressively less specific information (iteratively cleaned) (Commons: para. 0060, lines 1-3). This process is repeated until a match is found or it is determined that no matching records exist (Commons: Figs. 3A, 3B; para. 0060-63).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the method of Haimowitz by adding the feature of cleaning the dirty data record by modifying the dirty data record in response to determining that no match is present based on the comparing.

The motivation for doing so would have been because iteratively cleaning the input data and performing a matching process to retrieve data is fast and accurate process for retrieving data (Commons: para. 0058, lines 1-3).

In regards to **claim 15**, Haimowitz discloses a computer memory (Col. 2, lines 61-63) comprising:

a. computer code means for receiving an input data record (Haimowitz: Col. 3, lines 32-33);

b. computer code means for comparing said input data record to a tabular format set of crude keys (Haimowitz: Col. 3, lines 37-40);

c. computer code means for returning a clean key associated with one of said crude keys upon a comparing match (Haimowitz: col. 6, lines 18-20)[7];

d. computer code means for creating a new crude key from said input data record such that said new crude key is added to the set of crude keys (Haimowitz: col. 6, lines 19-20; col. 9, lines 58-64).

Haimowitz does not expressly disclose computer code means for iterative cleaning of said input data record upon a no-match return and storing the iteratively-generated respective cleaned input data record therefrom, computer code means for re-comparing said iteratively-generated respective cleaned input data record to said set of crude keys, and computer code means for creating a new crude key from a last said iteratively-generated respective cleaned input data record.

Commons discloses an iterative process for finding a matching database record (Commons: para. 0058, lines 1-3). Commons further discloses using a search key that is matched against records that are stored in the database (Commons: para. 0058, lines 4-6, 10-11). If a match is not found on the first try, the search is repeated (matching is repeated) with progressively less specific information (iteratively cleaned) (Commons: para. 0060, lines 1-3). This process is repeated until a match is found or it is determined that no matching records exist (Commons: Figs. 3A, 3B; para. 0060-63).

[7] When a match is found, the existing record (clean key) associated with the matched candidate (crude key) is accessed (returning).

Haimowitz and Commons are analogous art because they are directed to the same field of endeavor of data storage and retrieval.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the computer memory of Haimowitz by adding computer code means for iterative cleaning of said input data record upon a no-match return and storing the iteratively-generated respective cleaned input data record therefrom, computer code means for re-comparing said iteratively-generated respective cleaned input data record to said set of crude keys, and computer code means for creating a new crude key from a last said iteratively-generated respective cleaned input data record, as taught by Commons.

The motivation for doing so would have been because iteratively cleaning the input data and performing a matching process to retrieve data is fast and accurate process for retrieving data (Commons: para. 0058, lines 1-3). Furthermore, since the process is iterative, manual intervention following a failed matching step is no longer required and thus provides convenience and speed.

In regards to **claim 17**, Haimowitz discloses the computer memory as set forth in claim 15 wherein said computer code means for generating a new crude key has heuristic routines (Haimowitz: Col. 5, lines 1-4, 50-67; col. 6, lines 6-10)[8].

In regards to **claim 18**, Haimowitz discloses the computer memory as set forth in claim 17 further comprising: computer code means for displaying in said tabular format said crude keys and heuristic routines (Haimowitz: Col. 10, lines 4-18).

In regards to **claim 19**, Haimowitz discloses the computer memory as set forth in claim 15 wherein each of said crude keys has an associated pointer to obtain said associated clean key (Col. 4, lines 65-67; col. 5, lines 1-8)[9].

In regards to **claim 21**, Haimowitz discloses the computer memory as set forth in claim 15 wherein said tabular format is a displayable table, further comprising: computer code means including heuristic routines for editing said table (Haimowitz: col. 9, lines 30-41).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haimowitz et al. (US Patent 5,819,291) of record, hereinafter "Haimowitz", in view of Commons et al. (US Patent Pub 2002/0069195) of record, hereinafter "Commons", further in view of Mori et al. (US Patent 5,806,058) of record, hereinafter "Mori".

In regards to **claim 6**, Haimowitz and Commons do not expressly disclose a time-stamp associated with each said key record in the table wherein said time-stamp is indicative of most recent use.

Mori discloses an index record (key record) having a time access (time-stamp) field that indicates the time the index record was most recently used (Mori: col. 3, lines 45-47).

Haimowitz, Commons and Mori are analogous art because they are directed to the same field of endeavor of database management with indices.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined tool of Haimowitz and Commons by adding a time-stamp associated

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[8] The hash key field is interpreted as heuristic based routines because they are functions used to generate candidates (key records).
[9] Each of the candidates (crude keys) generated are associated with an existing record (clean key) in the database.

with each said key record in the table wherein said time-stamp is indicative of most recent use, as taught by Mori.

The motivation for doing so would have been because a timestamp indicating the most recent use of the index key would be useful in determining what indices are no longer useful and could potentially be deleted. An index that has not been accessed for a long time is most likely no longer useful and can be deleted to conserve space and increase the efficiency and speed of the database system (Mori: col. 1, lines 40-47, 59-62).

Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haimowitz et al. (US Patent 5,819,291) of record, hereinafter "Haimowitz" in view of Commons et al. (US Patent Pub 2002/0069195) of record, hereinafter "Commons", further in view of Kuga et al. (US Patent 5,276,616) of record, hereinafter "Kuga".

In regards to **claim 9**, Haimowitz discloses a data association and cleaning method comprising:

a. storing a plurality of clean data files and, associated with each of said clean data files, at least one indexing record, each said indexing record containing at least one field related to a respective associated clean data file such that said at least one indexing record serves as a pointer to the respective associated said clean data file (Haimowitz: Col. 2, lines 62-66; col. 3, lines 35-37; col. 4, lines 65-67; col. 5, lines 1-8)[10];

[10] A database of existing records is stored (clean data files). Associated with the existing records are candidates (indexing record). The candidate set is related to the associated existing record and serves as a method of accessing the clean data file (pointer to respective associated clean data file).

b. comparing an input data record to the indexing records for obtaining a match, and if the match occurs, assigning said input data record to the respective associated said clean data file (Haimowitz: col. 3, lines 31-43; col. 6, lines 11-21)[11]; and

c. upon no match, adding said cleaned input data record as a new clean data file with an associated indexing record therefor (Haimowitz: col. 6, lines 18-21)[12].

Haimowitz does not expressly disclose if the match does not occur, iteratively cleaning the input data record until at least a near-match between said cleaned input data record and at least one of the indexing records is obtained and assigning said cleaned input data record to the one of said clean data files associated with the near-matched indexing record and upon a near match, adding said cleaned input data record as a new indexing record for the associated one of said clean data files.

Commons discloses an iterative process for finding a matching database record (Commons: para. 0058, lines 1-3). Commons further discloses using a search key that is matched against records that are stored in the database (Commons: para. 0058, lines 4-6, 10-11). If a match is not found on the first try, the search is repeated (matching is repeated) with progressively less specific information (iteratively cleaned) (Commons: para. 0060, lines 1-3). This process is repeated until a match is found or it is determined that no matching records exist (Commons: Figs. 3A, 3B; para. 0060-63).

Kuga discloses an apparatus for generating an index from input data (Kuga: col. 5, lines 9-11). A matching module matches input data to an existing entry in a dictionary (database) to

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[11] An input data record is matched with each of the candidates (indexing record) to obtain a match. If a match is obtained then the input data record is used to update (assigned) the associated existing record in the database (clean data file) associated with the matched candidate (indexing record).

[12] If no match is found the input data is inserted into the database (adding input data record as a new clean data file).

determine a match. When there is a substantial match or an exact match, an index entry is generated and associated with the existing entry (Kuga: col. 13, lines 26-45).

Haimowitz, Commons and Kuga are analogous art because they are directed to the same field of endeavor of data storage and retrieval.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the method of Haimowitz by adding the steps of iteratively cleaning the input data record until at least a near-match between said cleaned input data record and at least one of the indexing records is obtained and assigning said cleaned input data record to the one of said clean data files associated with a near-matched indexing record upon no match, as taught by Commons and adding said cleaned input data record as a new indexing record for the associated one of said clean data files upon obtaining a match, as taught by Kuga.

The motivation for doing so would have been because iteratively cleaning the input data and performing a matching process to retrieve data is fast and accurate process for retrieving data (Commons: para. 0058, lines 1-3). Furthermore, since the process is iterative, manual intervention following a failed matching step is no longer required and thus provides convenience and speed. The motivation for creating an indexing record upon a match would have been because manual index creation is burdensome and inconsistent (Kuga: col. 1, lines 47-68).

In regards to **claim 10**, Haimowitz discloses the method as set forth in claim 9 wherein said storing is in a displayable format (Haimowitz: Fig. 5).

In regards to **claim 11**, Haimowitz discloses the method as set forth in claim 10 further comprising: at given intervals, performing a data clean-up on a stored table in said displayable format (Haimowitz: Fig. 5; col. 9, lines 30-32; col. 10, lines 4-6, 9-18)[13].

In regards to **claim 12**, Haimowitz discloses the method as set forth in claim 9 wherein upon said adding said cleaned input data record as a new clean data file with an associated indexing record therefor, flagging said new clean data file (Haimowitz: col. 9, lines 58-64)[14].

Claim 13 was addressed above in the rejection to claim 9 as being disclosed by Haimowitz and Commons. Haimowitz and Commons disclose said iteratively cleaning (Commons: para. 0058, lines 1-3) further comprising:

a. cleaning said input data record and storing a first cleaned input data record (Commons: para. 0060, lines 1-3);

b. comparing the first cleaned input data record to said indexing records (Commons: para. 0060, lines 1-3), and

i. upon recognizing a match therebetween, stopping said comparing, and retrieving the associated clean data file for association with said first cleaned input data record (Commons: Figs. 3A, 3B; para. 0060-63),

ii. upon not recognizing a match therebetween, re-cleaning said first cleaned input data record, discarding said first cleaned input data record, and storing it as a subsequently cleaned input data record; (Commons: Figs. 3A, 3B; para. 0060-63)

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[13] An administrator can add additional rules and choose indices at given intervals using the graphical user interface shown in figure 5 (displayable format).

[14] The new customer ID generated for the new record is interpreted as flagging the new entry (new clean data file).

c. re-comparing the subsequently cleaned input data set to said indexing records (Commons: Figs. 3A, 3B; para. 0060-63); and

d. iteratively repeating said re-cleaning and re-comparing until a predetermined phase of cleaning is reached and no said match therebetween is determined (Commons: Figs. 3A, 3B; para. 0060-63), and storing the most recent re-cleaned and re-compared input data record as a new clean data file (Haimowitz: col. 6, lines 18-21).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haimowitz et al. (US Patent 5,819,291) of record, hereinafter "Haimowitz" in view of Commons et al. (US Patent Pub 2002/0069195) of record, hereinafter "Commons", further in view of Vagnozzi (US Patent 6,070,164) of record.

In regards to **claim 20**, Haimowitz, Commons and Kuga do not expressly disclose each of said crude keys points to a cleanest one of a plurality of crude keys associated with a clean data file.

Vagnozzi discloses data values stored in a database that are associated with fine keys (cleanest key), which are in turn associated with one or more coarse keys (crude keys) (Vagnozzi: col. 3, lines 23-45).

Haimowitz, Commons, Kuga and Vangozzi are analogous art because they are directed to the same field of endeavor of database systems using indices.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined computer memory of Haimowitz, Commons and Kuga by making each

of said crude keys points to a cleanest one of a plurality of crude keys associated with a clean data file, as taught by Vagnozzi.

The motivation for doing so would have been because it allows for fast query responses by minimizing the number of key indices required (Vagnozzi: col. 2, lines 65-67; col. 3, lines 1-17, 21-23).

(10) Response to Argument

A. Response to Appellants arguments in regards to the rejection of claims 1, 4, 5, 7, 8, 15, 17-19, 21 and 23 under 35 U.S.C. 103(a) over Haimowitz in view of Commons.

Appellant argues the claims in groups, therefore the arguments will be addressed in corresponding groups. Since the claims are rejected under 35 U.S.C. 103(a), the requirement is that a prima facie case of obviousness be established. For a prima facie case of obviousness to be established, three elements must be met.

(1) All the limitations of the claims must be disclosed by the references.

(2) There must be a reasonable expectation of success for the combination.

(3) There must be a motivation or suggestion to combine that can be found in the references or in knowledge commonly available to one of ordinary skill in the art.

In each of the subgroups below, Appellant alleges that the Examiner fails to satisfy one or more of the required elements of a prima facie case of obviousness. However, it is shown that all the elements of a prima facie case of obviousness are satisfied rendering the rejections under 35 U.S.C. 103 proper.

A.1 Claims 1, 4, 5, 7 and 8 are unpatentable under 35 U.S.C. 103(a) over Haimowitz in view of Commons because the combination of Haimowitz and Commons (1) disclose all the limitations of the claims and (2) there was a motivation to combine Haimowitz with Commons.

In regards to argument (1), Appellant alleges that the combination of Haimowitz and Commons fails to disclose all the limitations of the claims. In particular, Appellant alleges that the combination fails to disclose "heuristic-based routines to iteratively clean the newly received data records by modifying the newly received data records in response to no match occurring between the received data records and the key records in the persistent storage" (Brief at 5-6.) Appellant contends that the method of matching data records disclosed in Commons is different from the method of matching data records of the claim (Brief at 6.) The Examiner respectfully disagrees.

As summarized by Appellant, Commons discloses an iterative process for finding a database record by iteratively determining a match using a search key for each iteration. Commons at Fig. 3A, 3B; para. 0058; para. 0060-63. Appellant contends the limitation distinguishes from Commons because: (a) the Examiner confused data records for key records and as a result, Commons does not properly map to the elements of the limitation and (b) "cleaning a newly received data record" by "modifying the newly received data record" is not the same as generating search keys based on less specific information, as disclosed by Commons (Brief at 7-8.)

In regards to argument (a), the Examiner had no such confusion. As noted by Appellant, claim 1 recites a persistent table having clean data records and key records (Brief at 7.) This

limitation was disclosed by Haimowitz and not by Commons. *See* Haimowitz at col. 2, lines 63-6; col. 4, lines 65-7; col. 5, lines 1-8. In addition, Haimowitz discloses heuristic-based routines to match newly received data records to the key records in the persistent table. Haimowitz at col. 3, lines 37-40. Commons was relied upon for the disclosure of an iterative matching process, which is not expressly disclosed by Haimowitz. As such, the Examiner maps the search keys of Commons to the "newly received data record" of the claim and the database records of commons to the "key records" of the claim. More explanation on how Commons maps to the limitation will be addressed below with respect to argument (b). Thus, there was no confusion in relying upon Commons.

In regards to argument (b), Appellant contends the iterative generation of search keys in Commons is not the same as "cleaning a newly received data record by modifying the newly received data record" (Brief at 7.) The Examiner respectfully disagrees. The limitation defines "cleaning" as "modifying." Commons discloses generating a first search key to perform a search and upon no match being found, generating a second search key with less specific information. This iterative process continues until a match is found or the least specific information has already been used. Commons at para. 0058; para. 0060-03. Appellant argues that this iterative process is different from the "cleaning" of the limitation because the search keys are generated based on different information (Brief at 7.) On the contrary, the search keys are generated based on the same information, however, less specifics of the information are used for each iteration of the search key. The information listed in para. 0057 of Commons is used as the basis for generating the search keys. Each generated search key simply uses information that is less unique than the previous search key. In addition, each search key is a hash code generated based

on the information that is predetermined for each iteration. Commons at para 0058. Since all the keys are based on the same information, except with each generated search key, less unique information is used, the Examiner interprets that all the generated keys are simply modifications of the first generated search key. For example, if the first search key is generated based on the most unique information A, B, C, D and E and no match is found, the second search key would be generated using less unique information A, B, C and D. Essentially, the information used to generate the search key is modified and as a result, the generated search key is modified. Thus, the search key (i.e. newly received data record) is "cleaned" by "modifying" it. Since the combination of Haimowitz and Commons disclose all the limitations of the claims for the reasons above, the first element of a prima facie case of obviousness is satisfied.

In regards to argument (2), Appellant also alleges that there is no motivation to combine Haimowitz with Commons (Brief at 8.) The Examiner respectfully disagrees. A suggestion or motivation to combine must be found in the references or in knowledge commonly available to one of ordinary skill in the art. In this case, the motivation to combine Haimowitz with Commons comes from both the reference and knowledge commonly available to one of ordinary skill in the art. Commons discloses using an iterative process to find matching database records as quickly and as accurately as possible. Commons at para. 0058, lines 1-3. In addition, iterative processing is commonly known to one of ordinary skill in the art because it allows for unsupervised processing while maintaining speed and accuracy. For example, the processing in Commons generates a first search key, based on the most unique information, to search for a matching database record. Once it is determine that there is no matching database record, a second search key is generated based on less unique information and the search is performed

again with the second search key. There is no need for user interaction once no match was found with the first search key. The process would continue until a match is found or the least specific information has been used. As a result, there is no need for supervision and accuracy is maintained since the most unique search key will be matched, if there is a match at all. Thus, the motivation to combine Haimowitz with Commons would be to increase the speed and accuracy of finding a match. Appellant contends that there is no motivation because Haimowitz and Commons are allegedly nonanalogous art (Brief at 8-9.) However, Haimowitz and Commons are analogous art because they are directed toward the same field of endeavor of database searching and retrieval. Although the specifics and purpose of their respective inventions may be different, the underlying basics of their inventions are the same.

For the reasons stated above, the Examiner asserts that Haimowitz and Commons disclose all the limitations of the claims and that there is a motivation to combine Haimowitz with Commons found in the reference and in knowledge available to one of ordinary skill in the art. As a result, a prima facie case of obviousness is established rendering the rejection under 35 U.S.C. 103 proper. It is respectfully requested that the Board sustain the rejection of claims 1, 4, 5, 7 and 8 under 35 U.S.C. 103(a) over Haimowitz in view of Commons.

A.2 Claim 23 is unpatentable under 35 U.S.C. 103(a) over Haimowitz in view of Commons because the combination of Haimowitz and Commons discloses all the limitations of claim 23.

Appellant alleges that the combination of Haimowitz and Commons fails to disclose all the limitations of claim 23 (Brief at 9-10.) Claim 23 recites similar subject matter as claim 1,

which has been addressed above in section A.1. Appellant notes that claim 23 recites "clean data files," "crude keys" and "dirty data record" indicating that these items are different items (Brief at 10) as reasons for distinguishing from Commons. In regards to the "clean data files," Haimowitz discloses a database of files, which are interpreted as "clean data files". Haimowitz at col. 2, lines 62-66. In regards to the "crude keys," Haimowitz discloses a candidate set of records (i.e., crude keys). Haimowitz at col. 3, lines 34-47. In regards to a "dirty data record," Haimowitz discloses a new record, which is interpreted as a "dirty data record." Haimowitz at col. 3, lines 32-3. With respect to Commons, the first search key generated is interpreted as a "dirty data record," which is "cleaned" when the second search key is generated from less unique information. As a result, Haimowitz combined with Commons results in the comparison of a "cleaned dirty data record to the tabulation" as recited in claim 23. Thus, the combination of Haimowitz and Commons disclose all the limitations of claim 23 as discussed above in section A.1 and as explained in this section.

For these reasons, a prima facie case of obviousness is established rendering the rejection of claim 23 under 35 U.S.C. 103 proper. It is respectfully requested that the Board sustain the rejection of claim 23 under 35 U.S.C. 103(a) over Haimowitz in view of Commons.

A.3 Claims 15, 17-19 and 21 are unpatentable under 35 U.S.C. 103(a) over Haimowitz in view of Commons because the combination of Haimowitz and Commons (1) disclose all the limitations of the claims and (2) there was a motivation to combine Haimowitz with Commons.

Appellant mainly argues with respect to the limitations of claim 15. Claim 15 recites subject matter similar to claim 1 in the form of a computer memory comprising computer code. Therefore, the arguments in regards to subject matter similar to claim 1 are addressed with the same rationale as discussed in section A.1. In addition, arguments in regards to the motivation to combine Haimowitz and Commons have also been addressed above in section A.1.

In addition, Appellant raises an issue regarding the limitation of "a last said iteratively-generated respective cleaned input data record such that said new crude key is added to the set of crude keys," recited in claim 15 and not in claim 1. Appellant alleges that combination of Haimowitz and Commons fails to disclose the limitation because there is no suggestion in Commons (Brief at 11.) The Examiner respectfully disagrees. The limitation is disclosed by the combination of Haimowitz and Commons. Haimowitz discloses creating a new crude key from the input data record such that said new crude key is added to the set of crude keys. Haimowitz at col. 6, lines 19-20; col. 9, lines 58-64. Therefore, what requires modification is changing the input data record of Haimowitz to the iteratively cleaned input data record, disclosed by Commons. As discussed previously, Commons discloses generating a first search key to perform a search with and upon no match being found, generating a second search key with less specific information. This iterative process continues until a match is found or the least specific information has already been used. Commons at para. 0058; para. 0060-03. Also as discussed previously, the iterative process using less specific information in each iteration is interpreted as "cleaning." Therefore, the "cleaning" of Commons can be used to modify the input data record of Haimowitz to create an iteratively cleaned input data record since only the steps of iteratively cleaning the input data record are missing from Haimowitz. As a result, the combination of

Haimowitz and Commons discloses "a last said iteratively generated respective cleaned input data record such that said new crude key is added to the set of crude keys.

For the reasons stated above, the Examiner asserts that Haimowitz and Commons disclose all the limitations of the claims and that there is a motivation to combine Haimowitz with Commons found in the reference and in knowledge available to one of ordinary skill in the art. As a result, a prima facie case of obviousness is established rendering the rejection under 35 U.S.C. 103 proper. It is respectfully requested that the Board sustain the rejection of claims 15, 17-19 and 21 under 35 U.S.C. 103(a) over Haimowitz in view of Commons.

B. Response to Appellant's arguments in regards to the rejection of claim 6 under 35 U.S.C. 103(a) over Haimowitz in view of Commons and Mori.

Appellant's arguments reference the arguments presented with respect to claim 1, which have been addressed above in Section A.1. Appellant presents no further arguments with respect to claim 6. Therefore, it is respectfully requested that the Board affirm the final rejection of claim 6.

C. Response to Appellant's arguments in regards to the rejection of claims 9-13 under 35 U.S.C. 103(a) over Haimowitz in view of Commons and Kuga.

Claims 9-13 are rejected under 35 U.S.C. 103(a), the requirement is that a prima facie case of obviousness be established. As discussed in section A above, for a prima facie case of obviousness to be established, three elements must be met.

C.1 Claims 9-13 are unpatentable under 35 U.S.C. 103(a) over Haimowitz in view of Commons and Kuga because the combination of Haimowitz, Commons and Kuga (1) disclose all the limitations of the claims and (2) there was a motivation to combine Haimowitz with Commons and Kuga.

In regards to argument (1), Appellant alleges that the combination of Haimowitz, Commons and Kuga fail to disclose (a) "if the match does not occur, iteratively cleaning the input data record until at least a near-match between the cleaned input data record and at least one of the indexing records is obtained, and assigning the cleaned input data record to the one of the cleaned data files associated with the near-matched indexing record" and (b) "upon a near match, adding the cleaned input data record as a new indexing record for the associated one of the clean data files, and upon no match, adding the cleaned data record as a new clean data file with an associated indexing record therefor" recited in claim 9 (Brief at 12.) The Examiner respectfully disagrees.

In regards to limitation (a), as discussed above in relation to claims 1 and 15, Commons discloses generating a first search key to perform a search with and upon no match being found, generating a second search key with less specific information. This iterative process continues until a match is found or the least specific information has already been used. Commons at para. 0058; para. 0060-03. The Examiner asserts this feature of Commons, used to modify Haimowitz, discloses limitation (a) of claim 9 for the reasons discussed above in section A in regards to the interpretation of "cleaning." Thus, Haimowitz in combination with Commons discloses limitation (a).

In regards to limitation (b), Kuga discloses an apparatus for generating an index from input data (Kuga at col. 5, lines 9-11), a matching module that matches input data to an existing entry in a dictionary (i.e., database) to determine a match and when there is a substantial match (i.e., near match) or an exact match, an index entry is generated and associated with the existing entry. Kuga at col. 13, lines 26-45. As stated in the rejection, Haimowitz discloses the second part of limitation (b). Haimowitz discloses upon no match, adding said cleaned data record as a new clean data file with an associated indexing record therefor. Haimowitz at col. 6, lines 18-21. Essentially, Haimowitz discloses that if no match is found, the input data is inserted into the database (i.e., adding input data record as a new clean data file). Thus, Kuga was only relied upon for the first part of limitation (b). In this regard, mapping the first part of limitation (b), Kuga discloses upon a substantial match (i.e, near match), generating an index entry (i.e., adding the cleaned input data record as a new indexing record) and associating it with the existing entry (i.e., for the associated one of the clean data files). Appellant argues that Kuga "fails to teach or hit at adding a cleaned input data record as a new indexing record for an associated one of the clean data files upon occurrence of a near match" (Brief at 13.) In support of this allegation, Appellant analyzes the cited portion of Kuga in column 13 and erroneously concludes that "the original text ... has not been cleaned; rather, it is the original text portion ... that is stored" (Brief at 14.) Contrary to Appellant's allegation and premature conclusion, Kuga explicitly states "[t]he information outputted to index entry storage may not be a morpheme itself but may be an inflexion or a variant thereof." Kuga at col. 13, lines 51-3. Therefore, as asserted by the Examiner, Kuga does disclose adding a cleaned input data record. Thus, Haimowitz, in combination with Commons and Kuga, disclose all of limitation (b).

As a result, the combination of Haimowitz, Commons and Kuga disclose all of limitation (a) and (b) and accordingly, all of claim 9. Consequently, the first element of a prima facie case of obviousness is satisfied.

In regards to argument (2), Appellant alleges that there is no motivation to combine Haimowitz with Commons and Kuga. As explained in the Final Office Action at paragraph 78, all the references disclose methods of searching a database with a given entry. Commons and Kuga disclose additional features and modifications to the method that increase speed and efficiency. As required to establish a prima facie case of obviousness, the motivation or suggestion must be found in the references or in knowledge commonly available to one of ordinary skill in the art. In this case, the motivation can be found in both the references and in knowledge commonly available to one of ordinary skill in the art. Accordingly, the third element of a prima facie case of obviousness is satisfied.

For the reasons stated above, the Examiner asserts that Haimowitz, Commons and Kuga disclose all the limitations of the claims and that there is a motivation to combine Haimowitz with Commons and Kuga found in the references and in knowledge available to one of ordinary skill in the art. As a result, a prima facie case of obviousness is established rendering the rejection under 35 U.S.C. 103 proper. It is respectfully requested that the Board sustain the rejection of claims 9-13 under 35 U.S.C. 103(a) over Haimowitz in view of Commons and Kuga.

D. Response to Appellant's arguments in regards to the rejection of claim 20 under 35 U.S.C. 103(a) over Haimowitz in view of Commons and Vagnozzi.

Appellant's arguments reference the arguments presented with respect to claim 15, which have been addressed above in section A.3. Appellant presents no further arguments with respect to claim 20. Therefore, it is respectfully requested that the Board affirm the final rejection of claim 20.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Conclusion

For the above reasons, it is respectfully requested that the Board sustain the rejections.

Respectfully submitted,

Michael Le

Examiner

Art Unit 2163

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